found in the Forest-bed series of the east of England.——At a recent meeting of the Geological Society of London, Professor Owen described *Notochelys costata*, an extinct Chelonian from Blinder's river, Queensland. It is the first known Australian fossil turtle, and is of a generalized type between the Chelydrians and marine turtles. At the next meeting of the same society (Feb. 8, 1882), Mr. J. W. Hulke described *Iguanodon Seelyi* from a bed between the clays and gravel of the cliff in Brook bay, Isle of Wight.——Various and prolific seams of anthracite and bituminous coal, some of them 10 ft. or 12 ft. in thickness, have been found in Natal.——Professor Marsh contributes to the *American Journal of Science*, an article upon the wings of Pterodactyles, with a full size plate of *Rhamphorhynchus phyllurus* Marsh. The specimen described was found in the lithographic states of Bavaria, and shows very perfect impressions of the volant membranes of both wings, as well as of a separate. vertical rudder at the end of the long tail. The membrane was similar to that of bats.——In the Journal of the Cincinnati Society of Nat. History, Mr. S. A. Miller describes some new species and genera of Palæozoic fossils. He also gives a well-merited criticism of Professor Nicholson's book on *Monticulipora*, showing the extensive ignorance of its author of American writings on the subject. We performed the same duty for the same writer's manual of Palæontology a year or two ago.

MINERALOGY.[1]

TWO NEW GUANO MINERALS.—Professor C. U. Shepard[2] has described two new minerals which have originated in the guano formation covering the islands of Moneta and Mona, near Porto Rico, W. I., and to which he gives the names *Monetite* and *Monite*. They were found lining the walls of cavities in the rock guano, and, though undoubtedly formed through the action of percolating waters, contain no organic matter.

Monetite occurs in crystals having the form of rather thin rhomboids, often interpenetrating each other to form complex groups. Mr. E. S. Dana refers them to the triclinic system. Their greatest length is between $\frac{1}{12}$th and $\frac{1}{20}$th of an inch.

The mineral has an uneven fracture, a vitreous lustre, a pale, yellowish-white color, and is semi-transparent; hardness 3.5; specific gravity about 2.75. Heated before the blow-pipe in the forceps, it turns white and melts into a globule with crystalline facets.

It has the following composition (mean of two analyses by C. U. Shepard, Jr.):

Lime	Phosphoric acid	Sulphuric acid	Water.
40.255	47.100	4.550	8.175 = 100.080

[1] Edited by Professor HENRY CARVILL LEWIS, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.

[2] American Journal Sciences and Arts, May, 1882, p. 400.

On subtracting the gypsum and hygroscopic water, and raising the percentage to 100, there was obtained:—

P_2O_5	CaO	H_2O
52.28	41.14	6.58 = 100

giving the formula $2CaO, H_2O, P_2O_5$. It is associated with crystallized gypsum and calcite, and with the following species.

Monite is massive, slightly coherent, and wholly uncrystalline. It is snow-white, earthy and dull, with hardness below 2, and specific gravity about 2.1. In the closed tube it emits much moisture, and in the blow-pipe flame melts with difficulty to an opaque white enamel.

A mean of analyses, after deducting an admixture of gypsum, gave

P_2O_5	CaO	H_2O
41.92	51.15	6.93

corresponding to $Ca_3P_2O_8+H_2O$.

It resembles kaolinite, and is a hydrated tricalcic phosphate.

URANOTHALLITE.—Schrauf[1] has named the variety of Liebigite from Joachimsthal, analyzed long ago by Vogl and Lindacker, *Uranothallite*. It contains more lime than Liebigite, and its composition may be represented by the formula $Ca_2UC_4O_{12}$ +10 aq. It occurs in minute aggregated crystals and grains, often scaly, and has a green color and streak. It is translucent, has a vitreous lustre except on the cleavage face, where it is pearly, and is soluble in acids. The crystals are too imperfect to give satisfactory measurements.

CHIOLITE AND CHODNEFFITE.—Professor P. Groth, of Strassburg, has undertaken the revision of the natural compounds of fluoric acid, the analysis being performed by Mr. Brantl, of Munich, and, as one of the first results, announces the identification of Chodneffite with Chiolite. Three analyses of perfectly pure Chiolite gave:

	I.	II.	III.
Al	17.66	(2.) 17.65	17.64
Na	25.00	24.97	25.00
F	58.00	57.30	
	100.66	99.92	

yielding the formula $5NaF+3AlF_3$.

The former analyses of Rammelsberg were made upon massive uncrystallized fragments, some of which had a composition like that given above, but from which the formula $3NaF+2AlF_3$ was deduced; other portions, however, being richer in sodium and poorer in aluminium, and for these the formula $2NaF+AlF_3$ was constructed and the name Chodneffite given.

Professor Groth now shows that these latter analyses of Ram-

[1] Zeits. f. Kryst, 1882, VI. 4, 410.

melsberg were made upon material containing cryolite as an impurity, it being impossible to separate cryolite from chiolite in the massive state. Professor Von Jeremejew has examined the crystals of chiolite and finds them to be tetragonal.

Chodneffite is merely an impure chiolite, and must be stricken from the list of minerals.

RHODIZITE.—Rhodizite, an extremely rare mineral, occurring in minute crystals upon some red tourmalines in the Ural mountains, and supposed to be a borate of lime, has been the subject of two recent communications by Bertrand to the Mineralogical Society of France. The crystals present the form of a dodecahedron, modified generally by tetrahedral faces. Bertrand concludes, from an examination of their optical properties, that the crystals are to be considered *pseudo-isometric*, and are composed of twelve elementary monoclinic crystals twinned symmetrically around a point. He has been able, moreover, actually to separate these elementary crystals by cleavage. The elementary crystal of Rhodizite consists, he holds, of an oblique monoclinic prism of 120°, of which the height is equal to the width, and of which the obliquity is 54° 44′.

CROSBY'S COMMON MINERALS AND ROCKS.—The twelfth number of the "Guides for Science Teaching," issued by the Boston Society of Natural History for the use of teachers, has been prepared by Mr. W. O. Crosby, whose contributions to the geology and lithology of Massachusetts have been of great value. It is entitled "Common Minerals and Rocks," and is an elementary sketch treated in a familiar way, admirably serving the purpose intended. About twenty-five of the rock-forming minerals are described, special stress being laid upon their acidic or basic relations and their associations. The triclinic felspars, for example, are stated to occur with basic minerals, while orthoclase is acidic in its associations. The silicates are divided into the two groups of basic and acidic; all species containing sixty per cent. or less of silica being classed as basic, while those containing more than sixty per cent. of silica are acidic. The basic silicates are *dark* colored and *heavy*, the acidic being light in color and weight, and the two classes of silicates belong to distinct rocks.

The little treatise is written from the lithologist's standpoint, and the larger portion of it treats of the origin and physical differences of rocks. The author classifies rocks according to their geological origin.

MARTITE.—O. A. Derby[1] has examined a large number of octahedral crystals of *Martite* from Brazil, and concludes that while a portion of them have resulted from the decomposition of

[1] Am. Journ. Sc. and Arts, May, 1882, 373.

pyrite, a large proportion should be considered as produced by the alteration of magnetite. Nearly half the crystals examined were attractable by the magnet, and all possible gradation between typical magnetite and hematite, both in magnetism and composition, were observed.

SMALTITE FROM COLORADO.—*Smaltite*[1] has been discovered in Gunnison Co., Colorado, in sufficient quantities to lead to the belief that it will be a commercial source for cobalt. It is associated with calcite, erythrite, and occasionally pyrite and spongy leaflets of native silver. A sample from the surface gave M. W. Iles the following result:—

Co	Fe	As	SiO_2	Pb	S	Bi	Cu	Ni	Ag	
11.59	11.99	63.82	2.60	2.05	1.55	1.13	0.16	trace	trace	= 98.89

NEW MINERAL RESINS.—*Muckite.* This is a resin found in cretaceous lignite in Moravia, and named by Schröckinger. It has the formula $C_{20}H_{28}O_2$. *Neudorfite.* This is a resin associated with the above, and probably a mixture.

THE SAND OF THE DESERT OF SAHARA.—A mineralogical study of the sand of the desert of Sahara has brought out some particulars of interest. The sand is of a yellow color. The quartz grains, which constitute ninety per cent. of the sand are remarkably rounded and not so angular as those of sea sand; a fact evidently due to attrition by the action of the wind. It is found that more than nine per cent. of the sand is composed of grains of felspar. Other minerals which exist in small proportions are chalk, clay, halite, sylvite, magnetite, chromite, garnet, olivine, amphibole and pyroxene.

MINERALOGICAL NOTES.—*Beauxite*, a substance recently shown by Fischer to be a mixture, frequently contains considerable quantities of *titanium* and *vanadium*. It has been concluded by Dieulafait that beauxite originates from the decay of primitive granitic rocks, and that if so, these rocks should contain titanium and vanadium. In a recent paper in the *Comptes Rendus*, he demonstrates that this is the case, and that these elements are widely diffused throughout the older formations.——Certain zoned crystals of *blende* possess, in addition to the six characteristic cleavages of ordinary blende, three other planes of equally ready cleavage, which have recently been studied by Hautefeuille.——*Conarite*, or more properly, *Comarite*, has been shown by Bertrand to be probably hexagonal.——M. W. Iles has detected a vanadium mineral, probably *Dechenite*, forming red and yellow incrustations at some mines in Leadville, Col. An analysis of the incrustation was as follows: SiO_2 36.86, PbO 38.51, ZnO 9.07, V_2O_5

[1] l. c., 380.

9.14, Fe_2O_3 2.59, H_2O 2.41, CO_2 .48 = 99.06.——Professor B. K. Emerson has examined microscopically the rock forming a dyke which penetrates the bed of zinc ore at Franklin, N. J., and finds that it is a micaceous diabase, composed principally of labradorite, augite, biotite, and apatite, and containing, as foreign constituents, franklinite, zincite, willemite, and calcite.——The green nickle ore from New Caledonia, exhibited in quantity at the Centennial Exhibition, and known by the name of *Noumeite* or *Garnierite*, is an amorphous hydrous silicate of magnesia, containing more or less admixture of oxide of nickle. It has been considered as allied to Genthite, though probably a mixture. Bertrand considers that its optical character is that of a uniaxial substance.——Professor Shepard withdraws the species *Glaubapatite*, a name which he had given to a supposed soda-bearing guano. The soda was due to the damaged state of the cargo of the vessel in which the guano was shipped.

GEOGRAPHY AND TRAVELS.[1]

THE CONGO.—The treaty made by M. Savorgnan de Brazza with the native chiefs at Stanley Pool, is published in the *Proceedings* of the Royal Geographical Society for April. It is dated October 3, 1880, and cedes the territory between the rivers Jué and Inpila to France for the establishment of a station. Mr. Stanley on arriving at Stanley Pool was not allowed to establish a depot or proceed any further in consequence of this agreement, which is considered by the native chief Makoko, as binding him not to receive any Europeans but Frenchmen.

Mr. Stanley on his way up the Congo to the Pool, passed from Isangila to Manyanga entirely by river, but after that, he was obliged to make a road seven miles long, past the Ntombo Mataka Falls where he was again able to take to the river.

The French missionary Père Augouard has also visited Stanley Pool, and on his way discovered a river over eighty feet broad, named the Eluala, which is not marked on Stanley's map.

The natives have also ceded a tract of land on the Congo at Manyanga, to the Belgian expedition for a depot.

Just below the boundary of this tract, the Baptist mission has chosen a site and are building a house. On each side of the river there are many native towns within a short distance of this spot.

LAKE NYASSA.—The headquarters of the missionaries on this lake, has been removed from Livingstonia at Cape Maclear to Bandawé at Misangi Point, S. lat. 11° 56′ E. long. 34° 6′, a more healthy and central port. The new road from Nyassa to Tanganyika is to be begun soon. A new steamer is to be sent out by the London Missionary Society to Quillimane and thence to the north end of Nyassa and over the new road when finished, to

[1] Edited by ELLIS H. YARNALL, Philadelphia.